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<b>Notice of Allowability</b>	Application No.	Applicant(s)	
	10/687,682	LI ET AL.	
	Examiner	Art Unit	
	Jerry T. Rahl	2874	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicant's after-final amendment received 13 September 2006.
2. ☒ The allowed claim(s) is/are 1-39.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                                |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance             |
|  | 9. <input type="checkbox"/> Other _____  |

*Michelle R. Connelly-Cushman*  
MICHELLE CONNELLY-CUSHMAN  
PRIMARY EXAMINER  
10/2/06

Jerry T Rahl

*[Signature]*

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Rodney T. Hodgson on September 27, 2006.
3. The application has been amended as follows:
4. The first paragraph under the heading of "Summary of the Invention" in the Specification (page 6, lines 2-14) is amended to read:

"The present invention describes a motionless wide range multi-beam optical beam steering device and the methods for manufacturing the said beam steering device. Such device is also termed as optical "Transmitter" thereafter in the application. Furthermore, if an optical receiver is integrated, it is also termed as "Transceiver". The centerpiece of this transmitter is a planar wave guide based wave guide digital steering device (termed as "planar wave guide beam steering device (WG-BSDI)" thereafter) that employs wave guide switching element for deflecting light beam. Similar to the prior-art planar waveguide switch employing liquid crystal as the switching elements as disclosed by John Thackara ("Planar Waveguide Switch and Optical Cross-connect, WO 02/31558, International Publication Date: 18 April, 2002), one of the preferred configurations of the WG-BSD in the present invention steers efficiently randomly polarized beam of light. However, the steering operation is realized electrically by changing the liquid crystal refractive index via electric means rather than thermal means. In an alternative design, this WG-BSD is capable of efficiently steering a polarized beam of light by electric means."

5. On page 2 of the Specification, Line 7 is amended to read:  
"). One single gimball"
6. On page 2 of the Specification, Line 19 is amended to read:  
"TWEEZERS",

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7. On page 2 of the Specification, Line 20 is amended to read:  
“Acoustic BSD-”
8. On page 2 of the Specification, Line 22 is amended to read:  
“Graphics & Vision, Vol. 9, P.207, 2000). Electro-”
9. On page 4 of the Specification, Line 20 is amended to read:  
“. Different geometries was”
10. The first two lines of Claim 1 are amended to read:  
“An apparatus, comprising:  
a polarization insensitive wave guide switching means, comprising:”
11. The first line of Claim 24 are amended to read:  
“A method for producing a polarization insensitive wave guide switching element,  
comprising:”

#### **EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE**

12. The following is an examiner's statement of reasons for allowance. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”
13. Claims 1-39 are allowed. Claims 1-39 describe a polarization insensitive wave guide switching element, and a method for producing that element, where the element comprises a waveguide substrate; a planar wave guide; a liquid crystal material attached to the waveguide substrate having first and second states where in the first state the refractive index of the LC material matches that of the wave guide and in the second state the refractive index of the LC

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material does not match that of the wave guide; and a means for applying an electric field across the LC material.

14. US Patent No. 6,559,921 to Leslie et al. describes an apparatus having a waveguide switching element with a wave guide substrate (110), a planar waveguide (130, 140, 150) attached to the substrate, a liquid crystal material (160) attached to the waveguide substrate having first and second states where in the first state the refractive index of the LC material matches that of the wave guide and in the second state the refractive index of the LC material does not match that of the wave guide (Columns 4-5); and a means (120, 170) for applying an electric field across the LC material. Leslie et al. does not describe the wave guide switching element as polarization insensitive and there is no suggestion that the device of Leslie et al. may operate in a polarization insensitive manner.

15. US Patent No. 6,559,921 to Leslie et al. remains the closest prior art of record in this application. For the reasons stated above, however, Claims 1-39 herein are deemed to patentably distinguish over Leslie et al. and all other prior art of record.

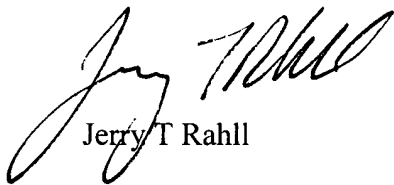
### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry T. Rahll whose telephone number is (571) 272-2356. The examiner can normally be reached on M-Th (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jerry T Rahll



MICHELLE CONNELLY-CUSHWA  
PRIMARY EXAMINER  
10/2/06